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Corn Production Guide : A Summary of Recommendations

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FS 291

CORN PRODUCTION GUIDE

A Summary of Recommendations

Cooperative Extension Service
South Dakota State University
Brookings, South Dakota

CORN
PRODUCTION GUIDE

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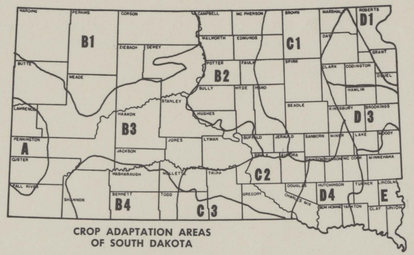
CROP ADAPTATION AREA	MATURITY RANGE OF HYBRID DAYS	DESIRABLE POPULATION 1000 PLANTS/ACRE	SEEDING DATE*
B1	85-90	4-6	Mid-May
B2	85-95	6-8	
B3	85-90	4-6	
B4		6-8	
C1	85-95	8-10	May 15-25
C2	90-100		May 10-20
C3			
D1	95-100	10-12	
D2	85-95	8-10	May 15-20
D3	95-100	10-12	May 10-20
D4	100-105		May 10-15
E	100-110	12-16	May 5-15

* Use treated seed.



CROP ADAPTATION AREAS OF SOUTH DAKOTA

Irrigation	5-15 days later than for dryland in same area	16-18	Same as for dryland corn in same area

FERTILIZER RECOMMENDATIONS

Use fertilizer to supplement nutrients in the soil; use more on soils of low fertility or in areas of higher rainfall. The majority of soils in South Dakota contain 2.5%-4% organic matter and 15-25 pounds of available phosphorus and 250-500 pounds of exchangeable potassium per acre. However, inherent soil differences and previous cropping cause considerable variation. Soil fertility can be estimated by crop performance, but soil tests give more accurate determination. Adjust rates of nitrogen according to the amount of organic matter in the soil and the area of the State (table 1). Use less than the recommended rate of nitrogen if corn follows a legume or an application of manure. Use 25% more nitrogen for corn to be cut for silage. Adjust rates of phosphorous and potassium according to the amount in the soil (tables 2 and 3).

NITROGEN

Table 1. Recommended Rates of Nitrogen Fertilizer

	Map Area	Percent Organic Matter	Nitrogen (lb/A)
1		0-2.5	80-90
		2.5-4	**55-75**
		4 and over	0-45
2		0-2.5	75-80
		2.5-4	**50-65**
		4 and over	0-45
3		0-2.5	65-70
		2.5-4	**45-60**
		4 and over	0-40
4		0-2.5	55-60
		2.5-4	**40-50**
		4 and over	0-35
5		0-2.5	50-55
		2.5-4	**40-45**
		4 and over	0-35
6		0-2.5	45-50
		2.5-4	**35-40**
		4 and over	0-30
7		0-2.5	40-45
		2.5-4	**30-40**
		4 and over	0-30
8		0-2.5	35-40
		2.5-4	**30-35**
		4 and over	0-25
9		0-2.5	30-35
		2.5-4	**0-25**
		4 and over	0

PHOSPHORUS

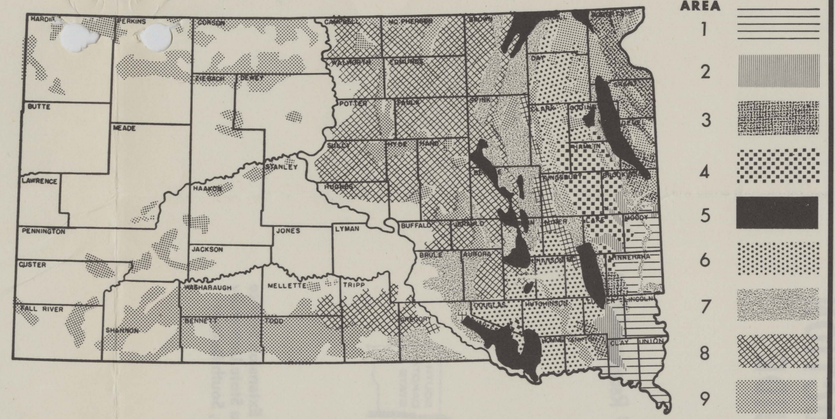
Table 2. Recommended Rates of Phosphorus

Available P (lb/A)	Rating	Lb/A on areas 1-4 on map: Broadcast P_2O_5	Broadcast P	Starter P_2O_5	Starter P
0-5	Very low	60	26	30	13
5-15	Low	45	20	30	13
15-25	**Medium**	**30**	**13**	**20**	**9**
25 or over	High	0	0	0	0
	Lb/A on areas 5-9 on map				
0-5	Very low	45	20	30	13
5-15	Low	30	13	20	9
15-25	**Medium**	**0**	**0**	**20**	**9**
25 or over	High	0	0	0	0

POTASSIUM

Table 3. Recommended Rates of Potassium

Potassium Soil Test	Rating	Pounds/Acre: Broadcast K_2O	Broadcast K	Starter K_2O	Starter K
0-150	Low	60	50	30	25
150-250	**Medium**	**0**	**0**	**20**	**17**
250+	**High**	**0**	**0**	**0**	**0**



Use more fertilizer under irrigation than on dryland because corn yield potentials are higher. Use the amount recommended above for dryland for your area plus 5 lbs. of nitrogen, 0.5 lbs. of phosphate (P_2O_5), and 1 pound of potash (K_2O) for each additional bushel expected from irrigation. For example, if you generally raise 70-bushel corn on dryland and the fertilizer recommendation is 60-20-0 and you expect an increase of 30 bushels with irrigation, add 45 lbs. of N (1.5 x 30); 15 lbs. of phosphate (0.5 x 30); and 30 lbs. of potash (K_2O) for a total of 105 lbs. of N, 35 lbs. of P_2O_5 and 30 lbs. of K_2O.

CHEMICAL WEED CONTROL

HERBICIDE	RATE (lb/A)	TIME OF APPLICATION
BROAD-LEAVED WEEDS		
2,4-D ester	½-½	2-leaf to silking
2,4-D amine	½-¾	Use drop nozzle after corn is knee high.
2,4-D	1	after tasseling
Stalks often become brittle and may break.		
ANNUAL WEEDS		
Atrazine	2-3	Pre-emergence or postemergence before weeds are 1 inch high. Must have ½ to 1 inch of rain within 2½-3 weeks. Carry-over will damage grain next year.
Atrazine + Linuron	1+1	Trial basis only. Pre-emergence as with Atrazine. Will minimize carryover to grain next year.
CDAA-T (Randox-T)	3.1	Pre-emergence; must have ½ inch of rain within 1 week. Granules easier to apply than sprays.
(Ramrod)	4	(Annual grassy weeds). Trial basis only. Pre-emergence needs rainfall similar to CDAA-T. Dust from handling wettable powder may irritate eyes.
2,4-D and dalapon mix	¾ 1½-2	Direct at base of corn plant when whorl of corn plant is 15 inches high. Use leaf lifter attachment.
Linuron and surfactant	4 0.5%	

For more information see these Fact Sheets: Planting Corn, Fertilizing Corn, Corn Rootworm Control, Corn Borer Control, and Weed Control in Corn.

Insecticides and herbicides can be poisonous; handle and store them with care. Be sure to read the label and follow the directions. Keep children and pets out of the area where chemicals are stored, mixed, or used.

Do not contaminate feed, feed containers, or water troughs. Carefully clean all contaminated planting equipment. Destroy all emptied containers so they cannot be used for any purpose.

Use of trade name does not imply endorsement of one brand over another.

Information for this publication is from L. A. Derscheid, R. A. Cline, E. E. Sanderson, E. J. Langin, E. P. Adams and K. R. Frost, of the Agronomy Department; B. H. Kantack and W. L. Berndt of the Entomology Department; and L. S. Wood, of the Plant Pathology Department. All are specialists with the South Dakota State University Cooperative Extension Service.

INSECT CONTROL

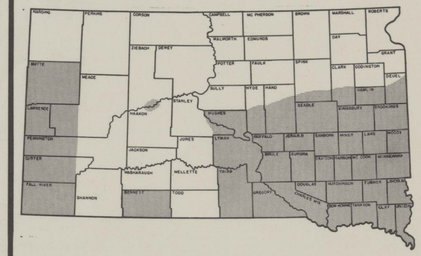
CORN ROOTWORMS

Use organic phosphate insecticides such as Diazinon, Thimet, or Niran (stabilized parathion) to control western rootworm in areas shaded in the map below. For best results apply granular forms in 4- to 7-inch bands over the rows (not with seed or fertilizer) at planting time and incorporate into the upper ½ inch of soil. Use at least 1 pound of active ingredient (10 lbs. of 10% granules or 7 lbs. of 14% granules) per acre of field—equivalent to 1 pound active ingredient on each 13,080 linear feet of row (10 pounds on each acre treated in 4- to 7-inch bands). Do not till (harrow, rotary hoe, etc.) diagonally or crosswise or it will reduce concentration of insecticide.

Applications may be made during first or second cultivation using attachments that allow the cultivator to incorporate insecticide, but it may be less effective.

Use chlorinated hydrocarbons in unshaded areas of the map to control northern rootworms. Apply broadcast while preparing the seedbed or in bands over the rows while planting. Use 1 pound active ingredient (5 lbs. of 20% granules or ½ gal. of 2 lbs./gal. emulsifiable concentrate) per acre on each acre in the field if applied in bands. Apply band applications behind planter shoe, ahead of packer wheels. Do not apply in mixtures with fertilizer or herbicide.

AREAS WHERE ORGANIC PHOSPHATE INSECTICIDES ARE RECOMMENDED FOR CONTROL OF CORN ROOTWORM IN 1966.



CORN BORER

Treatment of field corn for first brood will be profitable if 50-75% of the plants show leaf feeding in the whorl. This feeding injury will appear sometime after mid-June in South Dakota. Second brood treatments will be profitable when an average of one egg mass per plant can be found.

Insecticides can be applied either as granules or sprays. The following recommended insecticides can be applied either as granules or sprays:

Carbaryl (Sevin) wettable powder spray applied at the rate of 1.5 lbs. active ingredient per acre, or 30 lbs. of 5% granules per acre.

Commercial applicators may use endrin at the rate of 0.2 lbs. active ingredient per acre as a spray or 20 lbs. of 1% granules per acre. This treatment is restricted to one application per season. Do not treat within 45 days of harvest or ensiling. Do not feed the treated forage to dairy animals or to beef animals destined for slaughter. Check for the latest recommendations with your county agent.

CORN LEAF APHID: It is not economically feasible to use chemicals to control this insect as natural enemies prevent it from causing serious damage.

For information on corn diseases see fact sheets "Stalk Rots of Corn," "Ear Rots of Corn," "Corn Leaf Blight," Corn Smut," and "Seed Treatment."

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SOUTH DAKOTA STATE UNIVERSITY
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